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4303-1009

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of	Appeal No.
Harald KRAUS et al.	Conf. 2464
Application No. 10/588,766	Group 1792
Filed August 8, 2006	Examiner Roberts Culbert

METHOD FOR SELECTIVE ETCHING

REPLY BRIEF

MAY IT PLEASE YOUR HONORS: May 10, 2010

The Examiner's Answer of March 9, 2010 responded to the two erroneous interpretations discussed in the Appeal Brief. The Examiners remarks regarding these erroneous interpretations are discussed below.

1. CHRISTENSON does not suggest an etchant flow velocity parallel to the substrate surface that could be optimized.

The Examiner did not find the argument "CHRISTENSON does not suggest an etchant flow velocity parallel to the substrate" to be persuasive because the Examiner relied on the combination of CHRISTENSON and TANAKA.

Examiner states that "Christenson teaches a flow of 0.5 to 2 lpm for single wafer spray processors". Appellant has never disagreed with this fact.

Appellant also has never disagreed that TANAKA teaches a free-beam, which leads the respective velocity v parallel to the substrate's surface of minimum 0.1 m/s.

However, the Examiner (at item b. on page 6 of the Examiner's Answer) alleges that the volume flow of "0.5 to 2 lpm" of CHRISTENSON "… is sufficient to generate a mean velocity v parallel to the substrate's surface of minimum 0.1 m/s …". There is no finding of fact to support this conclusion.

That is, the Examiner does not explain where this velocity may be found in CHRISTENSON, or how this velocity (in meters per second) was determined based on the volumetric flow rate (liters per minute) taught by CHRISTENSON.

Consequently, this allegation remains a mere postulation.

2. CHRISTENSON teaches away from using either HfO_2 or ZrO_2.

The Examiner did not find the argument "CHRISTENSON teaches away from etching using HfO2 and ZrO2" to be persuasive because the Examiner selected that feature not from CHRISENSON but rather from BUCHANAN.

Appellant maintains that CHRISENTSEN explicitly teaches away from using the claimed HfO_2 or ZrO_2 because "a material comprising only one elemental constituent other an oxygen (e.g.,

HfO_2 or ZrO_2), are highly resistant to dilute etchants" (paragraph 22 of CHRISTENSON).

Moreover, while CHRISTENSON teaches $HfSiO_2$ may be substituted for HfO_2, as identified by the Examiner, $HfSiO_2$ is a completely different compound from HfO_2. This material is not only different in the chemical composition, but also in its crystals. That is, CHRISTENSON requires an additional elemental constituent, i.e., Si. The interpretation that HfO_2 is understood to be "substituted HfO_2" is simply chemically incorrect.

The ion bombardment that BUCHANAN teaches does not turn HfO_2 into $HfSiO_2$ so it does not turn HfO_2 into a different chemical substance. The ion bombardment rather brings cracks into the crystal structure of HfO_2 and thus enables HfO_2 to be etched by wet chemicals.

Thus, the fact remains that the dilute solutions utilized by CHRISTENSON are incompatible with materials including HfO_2, and, as explained in the Brief, HfO_2 would have rendered the materials of CHRISTENSON unsatisfactory for use with the dilute solutions of CHRISTENSON.

3. Conclusion

The above discussion is believed to underscore that the remaining rejections of the claims on appeal are improper and should be reversed. Such action is accordingly respectfully requested.

Respectfully submitted,

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